
PANAMANTHUS, A NEW MONOTYPIC GENUS OF NEOTROPICAL LORANTHACEAE¹

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ABSTRACT

The monotypic genus *Panamanthus* Kuijt (*P. panamensis* (Rizz.) Kuijt) is proposed to accommodate the Panamanian mistletoe previously known as *Struthanthus panamensis* (Rizz.) Barlow & Wiens; an expanded description and illustrations are provided. It is suggested that *Panamanthus* is related to *Gaiadendron* G. Don, another monotypic genus found in approximately the same ecological zone.

The mistletoe species known presently as *Struthanthus panamensis* (Rizz.) Barlow & Wiens was originally described as a member of the genus *Phrygilanthus* (Rizzini, 1960). As made clear by Barlow & Wiens (1973), Eichler's genus *Phrygilanthus* cannot be maintained for systematic and nomenclatural reasons. The only species of *Phrygilanthus* that Rizzini mentioned as a possible relative to his new species has subsequently been removed to *Psittacanthus* (*Psittacanthus palmeri* (S. Watson) Barlow & Wiens; Barlow & Wiens, 1973). Rizzini's species was transferred to *Struthanthus* by Barlow & Wiens (1973), although these authors did recognize its unusual nature.

There are two major morphological features in which Rizzini's species differs from all other known species of *Struthanthus*. First, it has bisexual flowers, whereas the other species are strictly dioecious. Second, the inflorescence is consistently monadic, while that of the other species is basically or entirely triadic. Also, the prophyllar bracteoles associated with each flower are fused above the flower so as to hide the entire ovary, a feature not known in any other neotropical continental Loranthaceae. The first two features are elsewhere in the New World known only in *Oryctanthus* Eichl., *Oryctina* Van Tiegh., *Maracanthus* Kuijt, and the Caribbean *Dendropemon* Blume, and strict logic would necessitate placement of Rizzini's species in one of those genera. Of these, only the last genus needs to be considered, as various other structural char-

acters prohibit placement in any of the first three. *Dendropemon* often has pedunculate monads, and the bracteoles are sometimes fused in a cupulate fashion. The anthers of Rizzini's species are nearly dorsifixed, but *Dendropemon* has unequivocally basifixed anthers. Also, the filaments of *Dendropemon* are laterally excavated, a feature shared with the continental *Phthirusa* but not with other genera. The stem roots of Rizzini's species have no equivalent in *Dendropemon*, and it would be extraordinary to have a low-elevation, strictly Caribbean genus represented by a single species at high elevations in Chiriquí. No one has suggested affinities to *Dendropemon*, however, which is clearly very closely related to *Phthirusa* and probably to *Oryctanthus* as well; the species would clearly be out of place there at least as much as it has been in *Struthanthus*. The disposition of *S. panamensis* has been a continual problem since its description, and I here propose that the species be treated as a monotypic genus with possible, but rather distant affinities to another monotypic genus found in the same ecological zone, i.e., *Gaiadendron*.

Panamanthus Kuijt, gen. nov. TYPE: *Panamanthus panamensis* (Rizz.) Kuijt, comb. nov.

Phrygilanthus panamensis Rizz., Ann. Missouri Bot. Gard. 47: 270–272. 1960.

Struthanthus panamensis (Rizz.) Barlow & Wiens, Brittonia 25: 39. 1973.

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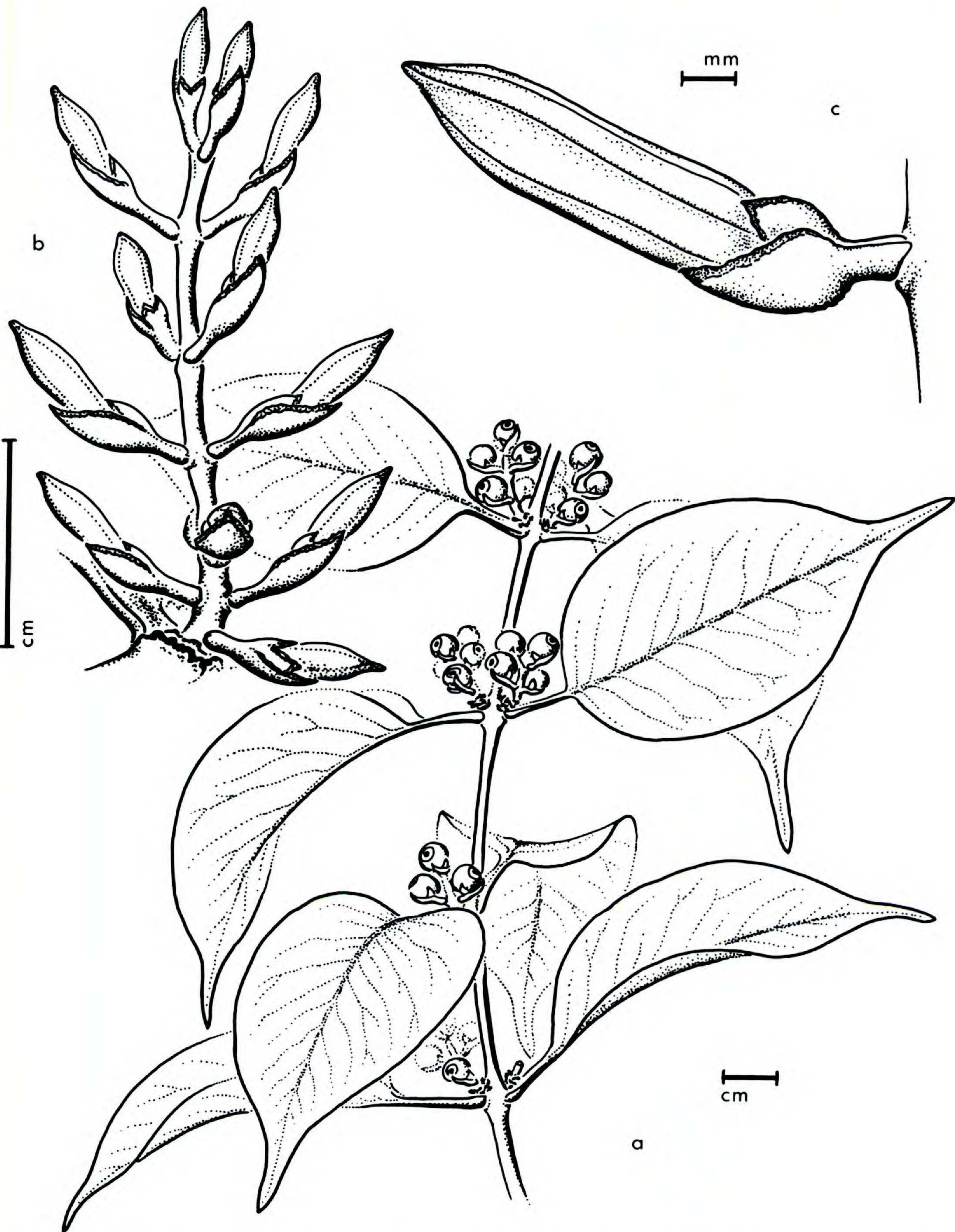


FIGURE 1. *Panamanthus panamensis*. —a. Habit of plant in fruit. —b. Inflorescence in bud. —c. Monad in bud (a, van der Werff & Herrera 6330, LEA; b, c, McPherson 9380, LEA).

Inflorescentia indeterminata, monadica, bracteis numerosis caducis suffulta; flores hermaphroditi, bracteolae coalitae, cupulam formantes et ovarium occultantes.

Scandent plants to 3 m diam., with rather straight, pendant branches 1 m or more in length,

with occasional epicortical roots formed from branches; internodes to 6 cm long, somewhat quadrangular when young, soon becoming terete. Leaves to 14 × 7 cm, decussate; petiole 1.5 cm long, blade thin, with evident pinnate venation, base

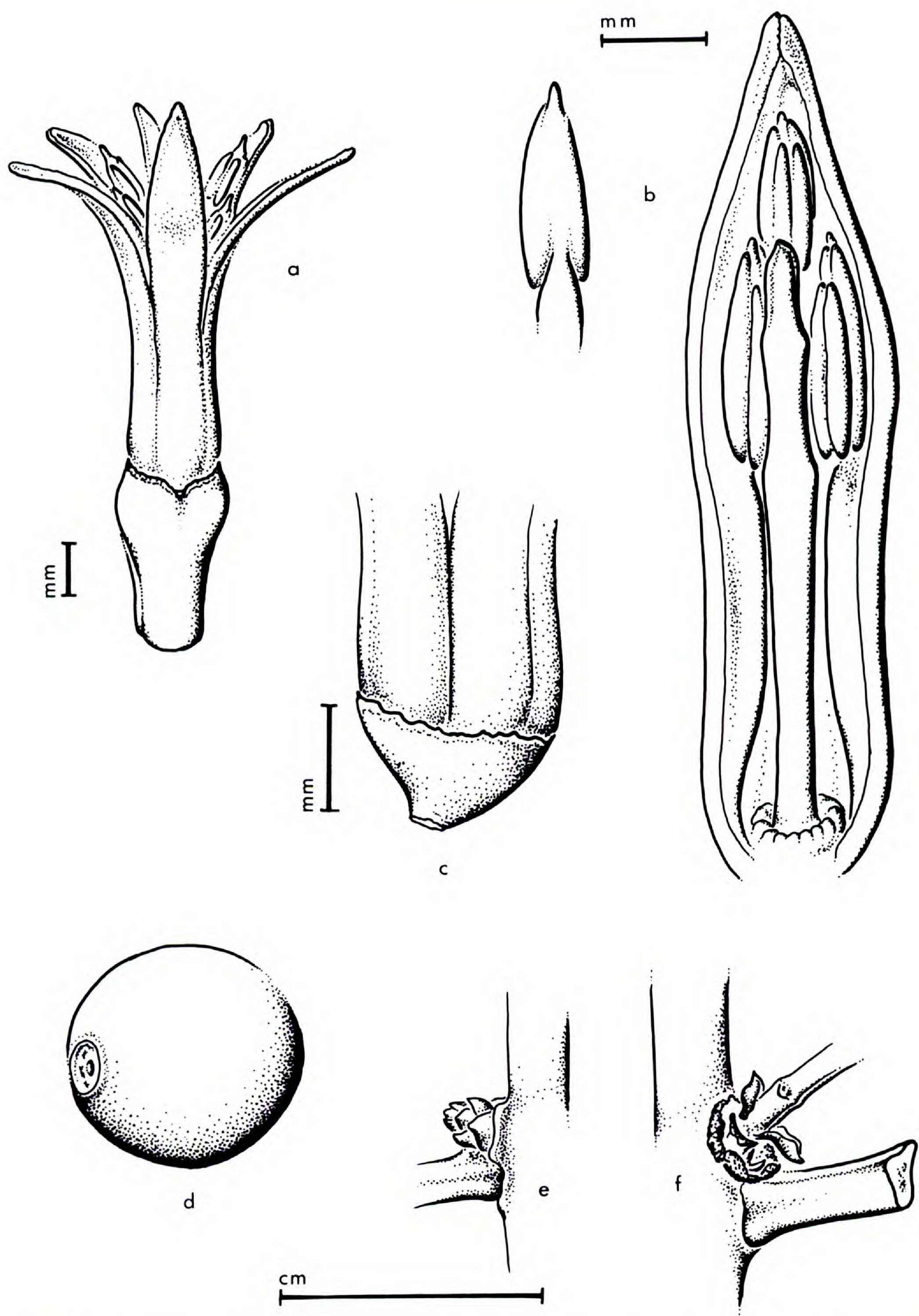


FIGURE 2. *Panamanthus panamensis*. —a. Open flower, the two fused bracteoles visible below. —b. Longitudinal section of mature bud, with stamen shown separately, dorsal view. —c. Base of flower. —d. Mature fruit. —e. Young inflorescence bud still covered by scale leaves. —f. Base of infructescence with old persistent scale leaves (a–c, McPherson 9380, LEA; d, Wilbur & Teeri 13109, DUKE; e, f, Luteyn 3786, DUKE).

truncate or very obtuse, apex contracted into conspicuous, slender tail to 1.5 cm long. Inflorescences 2–4 cm at anthesis, somewhat quadrangular, racemose, indeterminate, in small axillary clusters, individually subtended by several pairs of caducous scale leaves and set in a craterlike corky rim, inflorescence peduncle very short (2–3 mm), followed by 6–8 pairs of monads; monad peduncle 2–2.5 mm long, fused along its length with a bract extending 4 mm beyond and sharply acute; bracteoles ca. 2 mm long, fused along the lower $\frac{2}{3}$ of their length where investing the nearly hidden ovary, the free, acute tips 1 mm long; both bracteoles and bracts with conspicuous whitish margins when dry; infrutescence elongating to 6–9 cm at maturity. Flowers hexamerous, pale yellow, with pleasant odor, the petals very slightly dimorphic; mature bud 8–9 mm long, thickest (2 mm) just above the middle, with prominently acute tip; ovary very short (1 mm), calyculus inconspicuous, with slightly undulating rim; anthers dimorphic, basifixed or nearly so, lower ones reaching to top of stigma, upper ones almost entirely beyond; pollen sacs four, long and slender, connective extending beyond as a small spur; filament extremely short (0.5 mm), continuing downward as a long buttress on petal. Pollen isopolar, diplosyndemicolpate, glabrate. Style straight, ca. 5 mm long, terete below but compressed by the anthers above; stigma undifferentiated, sometimes slightly oblique. Nectary prominent, with somewhat undulating surface. Fruit baccate, nearly 1 cm diam., spherical, yellowish orange, its calyculus inconspicuous, viscin tissue insignificant. Embryo small (2 mm long), slender, lacking a swollen radicular apex at maturity.

Apparently a Chiriquí endemic, but to be looked for also in nearby Costa Rica, especially in the region east of San Vito.

Materials examined. PANAMA. CHIRIQUÍ: Boquete District, Bajo Chorro, rainforest, 6,000 ft., *Davidson 431* (holotype, US; isotypes, F, GH), 392 (F not seen); cloud forest, northeastern ridge leading to Cerro Horqueta, 1,800–1,900 m, *Luteyn 3786* (DUKE, F); Cerro Colorado, cloud forest 50 km N of San Félix on the continental divide, 1,200–1,500 m, *Mori & Dressler 7825* (MO); on trail to Cerro Horqueta, in cloud forest, 6,000–6,500 ft., *Proctor 31935* (LL); mossy forest E of Guadalupe along Río Chiriquí Viejo, about 2 mi. NE of Cerro Punta, ridge of Cerro Respinga, *Wilbur & Teeri 13109* (DUKE); disturbed cloud forest about 8 km W of Cerro Punta, in the vicinity of Las Nubes, 6,100–6,400 ft., *Almeda & Nakai 3536* (CAS, LEA); along old road from Boquete to Cerro Punta on cloud forest trail up to the N slope of Volcan Barú, 1,750–1,900 m, 8°50'N, 82°30'W, *Almeda, de Nevers & McPherson 6166* (CAS, LEA); Distr. Bugaba, Cerro Punta, from STRI house to edge of mountain across the river, 8°52'N, 82°33'W, 2,200 m, *van der Werff & Herrera 6330* (LEA, MO); on path up N

slope of Volcan Barú, starting along impassable road formerly linking Boquete and Cerro Punta, 8°50'N, 82°30'W, 1,750–1,900 m, *McPherson 11343* (LEA, MO); vicinity of Cerro Punta, above Guadalupe, forested slopes above STRI cabin, 2,300–2,450 m, *McPherson 9380* (LEA, MO).

DISCUSSION

The several structural peculiarities of *Panamanthus panamensis* outlined above, when taken in aggregate, sharply distinguish it from all other neotropical Loranthaceae. In terms of the inflorescence and associated features, the Australian genus *Atkinsonia* would seem to be the most similar. However, such an affinity could only be remote, as it would be qualified by the strictly terrestrial habit of that genus, and the various primitive features associated with it in the seedling stages at least some of which we can safely extrapolate from those of the closely related *Gaiadendron* (Kuijt, 1963, 1965). Any affinity of this sort, therefore, can only be tenuous.

Unfortunately, nothing is known about the chromosomes of *Panamanthus panamensis*, and it is precisely here that significant information might be expected. The primitive trio of *Atkinsonia*, *Gaiadendron*, and *Nuytsia* shares a basic number of $n = 12$, the chromosomes being very small for Loranthaceae (Barlow & Wiens, 1971); in contrast, the small-flowered neotropical genera of Loranthaceae like *Struthanthus* have $n = 8$, the chromosomes being among the largest known in the angiosperms (Wiens, 1964).

The caducous inflorescence bracts referred to in the above diagnosis have not, as far as I am aware, been mentioned in the literature, and contrast strongly to all other species of *Struthanthus* except two or three species that are clearly not related to *Panamanthus panamensis*, such as *S. leptostachyus* (Kuntze) G. Don. Similarly inconspicuous and caducous bracts are normal in *Gaiadendron*, where they may occasionally become elongated, foliar, and persistent (pers. obs.), and also in *Atkinsonia*, where they are always persistent (Barlow, 1966; Kuijt, 1981).

The pollen of *Panamanthus* is similar especially to that of *Struthanthus oerstedii* Standl. (Feuer & Kuijt, 1985) but lacks distinctive, specialized features. There are no significant similarities with the primitive “*Gaiadendron* trio” of monotypic genera which, however, shows extreme palynological contrasts among its component genera, as between *Nuytsia* and *Atkinsonia* (Feuer & Kuijt, 1980). Thus it appears again that great palynological divergence is compatible with close affinities in some mistletoe groups.

Altitudinal preferences are often consistent within individual genera of neotropical mistletoes. Thus, *Gaiadendron punctatum* tends to be a subpáramo species both in Central America and in its major area, Andean South America (Kuijt, 1989). In contrast, *Struthanthus* has strong preferences for low and middle elevations, nowhere occurring at the elevations noted for *Panamanthus panamensis* (1,200–2,450 m).

In summary, the monotypic generic status here proposed more adequately recognizes the unusual nature of the species. In this respect it might be noted that most accepted genera of small-flowered neotropical Lorantheae are more weakly separated from each other than *Panamanthus* is from other genera. For example, *Phthirusa* and *Dendropemon* are separable only on the basis of triadic vs. monadic inflorescences, respectively.

The morphological isolation of *Panamanthus* would seem to warrant status as a monotypic genus, however, no matter what its affinities to primitive or other mistletoe genera are. At the same time, if *Panamanthus* is related to *Struthanthus* it may, because of its bisexual flowers and monadic inflorescence, be regarded as significantly more primitive than that genus.

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